

REMARKS

Applicants respectfully request entry of the amendments and remarks submitted herein. Claims 23 and 25 were amended herein. Support for the amendments to claim 23 can be found, for example, on page 12, lines 32-35; page 17, Table 1; and page 19, line 10. Support for the amendments to claim 25 can be found, for example, on page 19, lines 19-20. Claims 1-22, 24, and 26-36 have been canceled, and new claims 37-59 have been added herein. Support for new claims 37-59 can be found throughout the specification and in the originally filed claims. Specifically, support for new claims 37-59 can be found, for example, on page 4, lines 36-37; page 5, lines 26-31; page 15, lines 22-29; page 17, Table 1; SEQ ID NO:3; page 19, lines 12-13, 19-20, and 30-38; page 20, lines 1-18; the sentence bridging pages 20 and 21; page 21, lines 27-29; page 22, lines 10-35; page 23, lines 11-25; page 24, lines 6-7; page 25, lines 3-10; page 34, lines 1-10; page 39, lines 5-8. Reconsideration of the pending application is respectfully requested.

The Specification

The Examiner objected to the title and asserted that the title was not descriptive. The Examiner stated that a new title is required that is clearly indicative of the invention to which the claims are directed. The Examiner further objected to the Abstract of the disclosure because the Abstract does not refer to the mutant delta-12 fatty acid desaturase of the claims.

Applicants have amended the title of the application. Applicants also have amended the Abstract to include reference to the mutant delta-12 fatty acid desaturase. Therefore, Applicants respectfully request that the objections to the specification be withdrawn.

Claim Objections

The Examiner objected to claim 36 because the claim depends from a non-elected claim.

Applicants have herein cancelled claim 36. Therefore, Applicants respectfully submit that the objection to claim 36 is moot.

The 35 U.S.C. §112 Rejections

Claims 1-9, 23-25, 29, and 36 stand rejected under 35 U.S.C. §112, first paragraph, as the Examiner asserted that those claims fail to comply with the written description requirement. This rejection is respectfully traversed.

The Examiner asserted that claims 1 and 23 are “broadly drawn to any mutation at the prescribed amino acid positions that completely eliminate delta-12 desaturase activity, while Applicant has not disclosed a mutation correlated with this particular function.” The Examiner further asserted that “[g]iven the failure of the mutant delta-12 fatty acid desaturase polynucleotides to be adequately described, methods of its use are also inadequately described.” The Examiner cites the Written Description Guidelines. The Examiner did not address the rejection of claim 29 for lack of written description.

Claims 1-9, and 36 have been cancelled herein. Claim 23 has been amended to recite that the construct contains a “delta-12 fatty acid desaturase mutant gene having a mutation in a (Ala/Gly)His(Asp/Glu)CysGlyHis conserved sequence....” In addition, Applicant has, in fact, disclosed a mutation in the recited region that rendered the delta-12 fatty acid desaturase non-functional. See, for example, Examples 1-4, pages 27-39 of the specification. In view of the amendments, Applicants have adequate written description for the method of claim 23, and were clearly in possession of the claimed invention at the time the application was filed.

In addition, the specification contains written description support for claim 29. Applicants, in fact, made a construct having a mutation in the claimed amino acid region that, when expressed, resulted in a non-functional delta-12 fatty acid desaturase. See, for example, Examples 1-4, pages 27-39 of the specification.

In view of the amendments and remarks herein, Applicants respectfully request that the rejection of claims 23-25 and 29 under 35 U.S.C. §112, first paragraph, be withdrawn. Applicants submit that the rejection of claims 1-9, and 36 is moot.

Claims 1-9, 23-25, 29, and 36 stand rejected under 35 U.S.C. §112, first paragraph, as the Examiner asserted that those claims fail to comply with the enablement requirement. Applicants respectfully traverse this rejection.

The Examiner stated that it is unpredictable that any one of a number of unspecified amino acid substitutions within the amino acid region of a delta-12 desaturase would completely eliminate enzyme activity. The Examiner further stated that guidance is lacking for using the method of claim 23 for both increasing and decreasing the fatty acid composition of a seed.

Claims 1-9, and 36 were cancelled herein. As amended, claim 23 now recites a particular conserved sequence of delta-12 fatty acid desaturase that contains the mutation. Applicants submit that the predictability of making a mutation within the claimed region that eliminates enzymatic activity is high. Claim 23 also now recites particular levels of oleic acid in the seeds of the claimed plants. Applicants submit that it is well within the purview of one of ordinary skill in the art to determine the effect of mutations within the conserved sequence of a delta-12 fatty acid desaturase on desaturase activity, and to assay the seeds from a plant for fatty acid composition, particularly for oleic acid content (claim 23) or linoleic acid content (claim 25). See, for example, Examples 1-4 on pages 27-39 of the specification. Applicants submit that the amount of experimentation required to make delta-12 fatty acid desaturase mutants and test for desaturase activity is not undue, and Applicants provide a significant amount of guidance and direction in the way of Examples. Applicants submit that the relative skill of those in this art is high.

Similarly, claim 29 recites a particular conserved sequence within delta-12 fatty acid desaturase that contains the mutation, and further recites that the construct is effective for decreasing linoleic acid content. As discussed above, the amount of experimentation required to make mutations within the recited region of delta-12 fatty acid desaturase and test for desaturase activity is not undue, and Applicants provide a significant amount of direction and guidance in the form of Examples. As above, Applicants submit that the relative skill of those in this art is high.

Applicants submit that the pending claims are enabled, and respectfully request that the rejection of claims 23-25 and 29 under 35 U.S.C. §112, first paragraph, be withdrawn. The rejection of claims 1-9, and 36 is moot.

Claims 1-9, 24-25, 29, and 36 stand rejected under 35 U.S.C. §112, second paragraph, as the Examiner asserted that those claims are indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. This rejection is respectfully traversed.

Claims 1-9, and 36 have been cancelled herein.

The Examiner asserted that the use of "altered" in claim 23 is indefinite. Claim 23 has been amended herein to recite a particular level of oleic acid in the seeds produced from the claimed plants. Applicants submit that in view of the amendment to claim 23, claim 23 is not indefinite for the use of "altered."

The Examiner asserted that the language in claim 24 implies that the gene product in claim 23 is not full length. The Examiner indicated that if this is Applicant's intention, then claim 23 must be amended to specify as such. Applicants have amended claim 23 to recite a "full length delta-12 fatty acid desaturase" and have canceled claim 24.

The Examiner suggested several amendments for claim 29. Applicants have herein amended claim 29 as suggested by the Examiner.

In view of the amendments and remarks herein, Applicants respectfully request that the rejection of claims 24-25 and 29 under 35 U.S.C. §112, second paragraph, be withdrawn. Applicants submit that the rejection of claims 1-9, and 36 is moot.

The Obviousness-Type Double Patenting Rejections

Claims 1-9, 23-25, 29, and 36 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 2, 6, 9, 10, 11, 12, and 13 of U.S. Patent No. 6,372,965 (the '965 patent). Applicants respectfully traverse this rejection.

Claims 1-9, and 36 have been cancelled herein. Claim 23 has been amended herein to recite that the delta-12 fatty acid desaturase mutant gene has a "mutation in a (Ala/Gly)His(Asp/Glu)CysGlyHis conserved sequence..." and that seeds produced from the progeny of plants containing the claimed construct have "an oleic acid content of from about 69% to about 90%." With respect to claims 23-25, the '965 patent does not make obvious a method of altering fatty acid composition in plant seeds by introducing a delta-12 fatty acid desaturase construct into plants, wherein the desaturase contains a mutation in a particular region, and where the seeds produced by the progeny of those plants have an oleic acid content of about 69% to about 90%. The '965 patent does not teach or suggest a method in which a construct that includes a delta-12 fatty acid desaturase containing a mutation in the (Ala/Gly)His(Asp/Glu)CysGlyHis conserved sequence is used to produce transgenic plants having seeds with an oleic acid content of 69% to 90%.

Claim 29 recites the particular region within delta-12 fatty acid desaturase that is mutated, and that the delta-12 fatty acid desaturase gene equivalent product is rendered non-functional. Claim 29 also recites that the construct is effective for decreasing linoleic acid content.

The '965 patent suggests, at most, that antisense or cosuppression constructs be introduced into plants containing an endogenous mutant delta-12 fatty acid desaturase gene. In addition, it would not have been obvious from the '965 patent that seeds of the progeny of the claimed method would contain 69% to 90% oleic acid content, as amended claim 23 recites. It would also not be obvious over the '965 patent that a construct expressing a non-functional delta-12 fatty acid desaturase would result in a decrease in linoleic acid content in seeds, as claim 29 recites.

In view of the amendments and remarks herein, claims 23-25 and 29 are not obvious over the corresponding claims of the '965 patent, and Applicants respectfully request that the obviousness-type double patenting rejection be withdrawn. Applicants submit that the obviousness-type double patenting rejection of claims 1-9, and 36 is moot.

Claims 1-9 and 36 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3, 5-9, and 32-43 of copending Application No. 08/572,027.

Claims 1-9 and 36 have been cancelled herein. Therefore, the obviousness-type double patenting rejection of claims 1-9 and 36 is moot.

The 35 U.S.C. §102 Rejections

Claims 1-9, 23-25, 29, and 36 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,372,965 (the '965 patent). This rejection is respectfully traversed.

Claims 1-9, and 36 have been cancelled herein. Claim 23 has been amended to recite the particular region within the delta-12 fatty acid desaturase that is mutated, and also that seeds produced from the progeny of the claimed plants contain an oleic acid content of about 69% to about 90%. The '965 patent does not disclose methods of altering fatty acid composition in plants by introducing a delta-12 fatty acid desaturase mutant gene, where the seeds produced by the progeny of such plants contain the claimed oleic acid content. The '965 patent also does not disclose a recombinant nucleic acid construct effective for decreasing linoleic acid content in seeds, where the construct contains a mutant delta-12 fatty acid desaturase gene that, when expressed, results in a non-functional desaturase enzyme.

Therefore, the '965 patent does not anticipate the pending claims. In view of the amendments and remarks herein, Applicants submit that the rejection of claims 1-9, and 36 is moot, and respectfully request that the rejection of claims 23-25 and 29 under 35 U.S.C. §102 be withdrawn.

Claims 1-9 and 36 are provisionally rejected under 35 U.S.C. §102(e) as being anticipated by copending Application No. 08/572,027, which has a common inventor with the instant application.

Claims 1-9 and 36 have been cancelled herein. Therefore, Applicants respectfully submit that the rejection of claims 1-9 and 36 under 35 U.S.C. §102 is moot.

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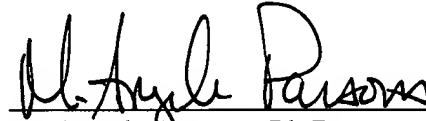
CONCLUSION

In light of the above amendments and remarks, Applicants submit that claims 23-25, 29, and 37-59 are in condition for allowance, which action is respectfully requested. Enclosed is a check in the amount of \$950.00 for a Petition for Three-Month Extension of Time fee. Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

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